



**SEWER SYSTEM MANAGEMENT PLAN
(SSMP) DEVELOPMENT GUIDE**

MISSION SPRINGS WATER DISTRICT

Sewer System Management Plan

Goals

Mission Springs Water District's mission statement is to "provide, protect, and preserve our most valuable resource-water." The framework for the goals of the Sewer System Management Plan (SSMP) is contained within that mission.

The SSMP will provide guidance to the District by addressing the following goals:

- Protection of both drinking water and hot mineral water through efficient operation of the District's wastewater collection system,
- Replenishment of the aquifer with secondary effluent from the District's wastewater treatment processes,
- Management of processes and systems in a manner that is responsive to growth and development conditions,
- Operation of collection and treatment systems in an environmentally responsible manner and
- Support of sustainable processes that will provide tertiary water at such time that the District identifies the need.

To fulfill those goals, the SSMP provides a detailed approach to planning and scheduling activities that will result in wastewater collection and treatment systems that are properly managed, operated and maintained. This planned approach will help reduce and prevent Sanitary Sewer Overflows (SSO), as well as mitigate any SSO that do occur.

Historically, SSO is a rare occurrence within the District's existing collection systems. The collection systems date from 1970 and have expanded to approximately 70 lineal miles of gravity mainline VCP, to include a 1.0 MGD lift station. Insuring the preservation of affordable high quality drinking water to 27,000 customers and hot mineral water for the area's spa industry continues to be the desired result of MSWD's wastewater system operations.

5- Design and Performance Provisions

5a. Standards for Installation, Rehabilitation and Repair

Requirement: The SSMP must identify design and construction standards and specifications for the installation of new sanitary sewer systems, pump stations and other appurtenances; and for the rehabilitation and repair of existing sanitary sewer systems.

Getting Started

Detailed standards are essential to ensure that new construction, replacement and rehabilitation work in your collection system is using the most recent and relevant standards of the industry. Having up to date and relevant standards prevent you from inheriting or accepting substandard work that, in the long-term, costs more to operate and maintain, or has to be replaced in a shorter life expectancy. Typically, the potential reduced capital costs are less than the long-term repair/replacement costs.

It also helps you educate other agencies (e.g., county, city, special district, building department, etc.) and the development community (e.g., developers, consultants, contractors, plumbers, etc.) of what is an acceptable standard for your sewer system before any design or construction begins. Design standards provide you the enforcement measures that you need to ensure you get a good quality wastewater collection system that is going to last for many generations. It also allows for consistency and a possible reduction in spare parts.

Self - Assessment

Table 5.1	Yes	No	NA
Do you have standard design criteria?			
Do you have standard specifications for new construction?			
Do you have standard construction details?			
Have these design criteria been reviewed and updated in the last five years?			
Do they cover both new construction and rehabilitation and repair construction methods?			
Do you require all developers and design consultants to reference or use your standards in the design of new, repaired and rehabilitated sewer construction projects?			
Is there a committee that is assigned the responsibility to routinely (e.g., every 2 to 3 years) review and evaluate your standards?			
Is there a mechanism to receive input and feedback on recommended changes from your internal staff and external third parties (e.g., developers, contractors, engineering consultants, etc.)?			
To minimize I/I, have you considered requiring a property owner selling a building (e.g., residential, commercial, industrial or institutional), to test the private sewer lateral by using CCTV, air testing or water testing. If defects are identified that require repairs, rehabilitation or replacement, this must be done prior to escrow closing.			

Deadlines

The deadlines for developing your agency's design and construction standards are shown in Table 5.2.

Table 5.2	
POPULATION SERVED	DEADLINE FOR COMPLETION OF DESIGN AND CONSTRUCTION STANDARDS
>100,000 People	May 2, 2009
10,000 to 100,000 People	August 2, 2009
2,500 to < 10,000 People	May 2, 2010
<2,500 People	August 2, 2010

Key Point

The SSMP can describe the existing Agency standards that are in place and the process for revising the standards. The SSMP can also include a list of the design standards and specifications most commonly referenced in the Agency's specifications or contract documents.

Helpful Information

Many sewer system agencies already have design and construction standards and specifications in place. If the existing standards contain all the elements required by the SSMP, the wastewater collection agencies can just refer to the documentation that already exists.

If your standards have not been updated in the last five years, you can take that next step and begin the evaluation and determine if an update is warranted, especially considering all of the sewer rehabilitation methods that have been developed and perfected over the last 10 years. There is no need to re-invent the wheel as there are many agencies that have very good wastewater collection system standards and most would be willing to share their work with you. Another alternative is to use outside help to get your standards reviewed and updated.

When you update your standards, you may want to consider developing standards that are electronically available to your staff, other agencies, and the private sector (e.g., developers, engineering consultants, contractors and plumbers).

The typical wastewater collection system material and construction standards may cover:

- Design criteria
- Manholes
- Pipes-gravity and force mains
- Cleanouts
- Lift Stations
- Air/vacuum release valves
- Backwater check valves
- In-line valves
- Pigging stations
- Trench excavation, bedding & backfill
- Earthwork
- Surface restoration
- Record drawings
- Boring and jacking
- Lining pipes
- Pipe bursting
- Pipe reaming
- Manhole and pipeline coatings
- SCADA/PLC Standards

The one area that standards will most likely not address for many agencies is sewer system rehabilitation methods. See links below for help with developing standards.

It is suggested you consider using only experienced and qualified staff or a team of individuals that are assigned and responsible for updating the standards. Typically when you make a change in one area it could impact another area of your standards, which is typically picked up by more senior and experienced staff.

Links and References

Resources that may provide standards to use as a starting point include:

- Pipe Users Group in Northern California <http://www.norcalpug.com/default.cfm>
- North American Society for Trenchless Technology <http://www.nastt.org>)
- Water Environment Federation (www.wef.org)
- The Green Book Standard Specifications for Public Works Construction <http://www.greenbookspecs.org/>

Other sources are engineering consultants and manufacturers that have standards which could be tailored and adapted to your needs.

EPA Region 4 (back east, not California) has developed extensive SSMP guides and information to help the sewer agencies in their region. The following is a link to their web site where you can download most of that information:

<http://www.epa.gov/region4/water/wpeb/momproject/index.html>

American Society of Civil Engineers, 1982, *Gravity Sanitary Sewer Design and Construction*, ASCE Manual and Report on Engineering Practice No. 60 and WPCF Manual of Practice No. FD-5

Sanks, 1998, *Pumping Station Design*, second edition.

U.S. Environmental Protection Agency, 1985, Design Manual for Odor and Corrosion Control in Sanitary Sewerage Systems and Treatment Plants, Document No. EPA/625/1-85/018.

U.S. Environmental Protection Agency, 1992, Detection, Control and Correction of Hydrogen Sulfide Corrosion in Existing Wastewater Systems, Document No. EPA-832-R-92-001, September 1992.

Water Environment Federation, 1993, Design of Wastewater and Stormwater Pumping Stations, MOP FD-4

5b. Standards for Inspection and Testing of New, Rehabilitated, and Repaired Facilities

Requirement: The SSMP must identify the procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.

Getting Started What goes hand-in-hand with having comprehensive and applicable detail design standards is having inspection standards to confirm that the design standards have been followed. The inspection and testing of new construction and rehabilitated and repaired sewer collection and conveyance infrastructure is just as critical as the design. Having up-to-date and relevant compliance inspection standards will provide you with the tools to ensure that you will not accept or inherit substandard work. It also establishes the measurement of what is acceptable work that your staff, other agencies (e.g., county, city, special district, building department, etc.), and the development community (e.g., developers, consultants, contractors, plumbers, etc.) should adhere to when designing, reviewing or accepting sewer system improvements that you will ultimately own and operate. Compliance standards provide you the enforcement measures that would ensure you get a good quality wastewater collection system that is going to last for many generations.

Self-Assessment Rule 5.3	Yes	No	DATE
Do you have compliance standards for new, rehabilitation and repair construction?			
Do you specify that an agency representative must inspect and test the work and testing it before it will be accepted?			
Do you have performance and payment bond requirements or require to be named in bonds to protect your agency and reduce the liability to your agency if substandard work is completed?			
Have these design criteria been reviewed and updated in the last five years?			
Do you have adequate inspection resources allocated to make sure construction complies with standards and construction requirements?			
Do you require all developers and design consultants to reference or use your compliance standards in the design of new, repaired and rehabilitated sewer construction projects?			
Is there a committee that is assigned the responsibility to routinely (e.g., every 2 to 3 years) review and evaluate your standards?			

Is there a mechanism to receive input and feedback on recommended changes from your internal staff and external third parties (e.g., developers, contractors, engineering consultants, etc.)?			
Do you have an inspection schedule of charges to cover the cost of inspection services?			
Do you have inspection of new sewer infrastructure mentioned above in 5a?			
Do you have standards for cleaning and for closed circuit television (CCTV) inspection procedures for sewer mains and laterals?			
Do you have procedures for air testing of gravity pipelines, vacuum testing of manholes, pressure testing of force mains, etc?			
Do you have a lift station inspection and testing checklist tor inspectors to use?			
Do you have a lift station clean water testing procedures to use?			

Deadlines

SSO- WDR Compliance Workshop SSMP Requirement 1:

Developing Your Plan

The deadlines for developing your agencies inspection and testing standards are shown in Table 5.4.

Table 5.4 POPULATION SERVED	DEADLINE FOR COMPLETION OF INSPECTION AND TESTING STANDARDS
> 100,000 People	May 2, 2009
10,000 to 100,000 People	August 2, 2009
2,500 to < 10,000 People	May 2, 2010
<2,500 People	August 2, 2011

Key Point

The SSMP can describe the existing compliance inspection standards that are in place and can also describe an assessment of the process to improve these standards. In addition, the SSMP can describe the inspection resources available and assigned to conduct the inspection and what training they are provided to keep up to date with the standards.

Helpful Information

Many sewer system agencies already have design and construction standards and specifications in place. If the existing standards contain all the elements required by the SSMP, the wastewater collection agencies can just refer to the documentation that already exists.

If your compliance inspection standards have not been updated in the last five years, you can take the next step and begin the evaluation and determine if an update is warranted, especially considering all of the sewer rehabilitation methods and compliance procedures that have been developed and perfected over the last 10 years. There is no need to re-invent the wheel as there are many agencies that have very good wastewater collection system compliance standards and most would be willing to share their work with you. Another alternative is to use outside help to get your compliance standards reviewed and updated.

When you update your standards you may want to consider developing standards that are electronically available to your staff, other agencies, and the private sector (e.g., developers, engineering consultants, contractors and plumbers).

The typical wastewater collection system compliance inspection standards may cover:

- Manholes - either hydrostatic or vacuum testing, consider testing manholes both prior to backfill and after backfill is complete if vacuum testing is used
- Gravity pipes - cleaning, air testing, CCTV, and mandrel testing, consider requiring testing at least 15 days after installation is complete
- Force mains - same tests listed for gravity pipelines, except pressure test of pipelines
- Cleanouts - air tested with the sewer main and laterals
- Lift Stations - wet well hydrostatic testing, pumps factory test and test in the field, controls factory test and test in the field, and piping and valves test in the field for operation and leakage
- Air/vacuum release valves - check for proper operation
- Backwater check valves - check for proper installation (not installed backwards) and operation
- In-line valves - installed properly and operate smoothly
- Pigging stations - check during cleaning of the gravity or force main
- Trench excavation, bedding and backfill - compaction testing and material testing
- Earthwork - material testing
- Lining pipes - cleaning, CCTV inspection, material testing, installer requirements
- Pipe bursting - cleaning, CCTV inspection, material testing, installer requirements
- Pipe reaming - cleaning, CCTV inspection, material testing, installer requirements
- Manhole and pipeline coatings - environmental conditions, surface preparation, thickness, and adhesion
- SCADA and PLC Testing

The one area that compliance inspection standards will most likely not address for many agencies is sewer system rehabilitation methods. See links below for help with developing standards,

It is suggested you consider using only experienced and qualified staff or a team of individuals that are assigned and responsible for updating the compliance standards. Typically when you make a change in one area it could impact another area of your standards, which is typically picked up by more senior and experienced staff,

Links and References

- Resources that may provide standards to use as a starting point include:
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